

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

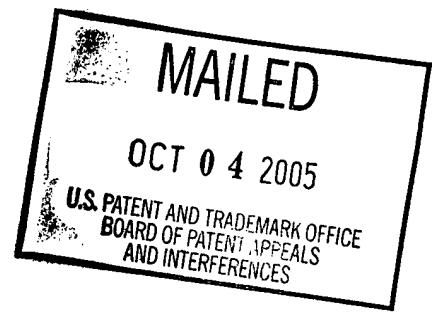
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PRADIP MITRA

Appeal No. 2005-2533
Application No. 09/976,559

ON BRIEF



Before THOMAS, KRASS, and NAPPI, Administrative Patent Judges.

NAPPI, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1 through 54. For the reasons stated infra we affirm-in-part the examiner's rejection of these claims.

THE INVENTION

The invention relates to a method for forming a radiation detector on a substrate.

Claims 1 and 6 are representative of the invention.

1. A method for forming a radiation detector, comprising the steps of:

forming a radiation absorption layer above a substrate;
forming a wider bandgap layer above the radiation absorption layer;
forming a passivation layer above the wider bandgap layer;
forming a patterned doping layer above the passivation layer;
driving dopant from the patterned doping layer into the wider bandgap layer and the radiation absorption layer to form a doped region; and
forming an electrical contact to the doped region.

6. A method for forming a radiation detector, comprising the steps of:

forming a radiation absorption layer above a substrate;
forming a wider bandgap layer above the radiation absorption layer;
forming a passivation layer above the wider bandgap layer;
forming a doping layer above the passivation layer;
wherein the absorption layer, the wider bandgap layer and the passivation layer are formed *in situ* by alternating layers of a first material and a second material, the composition of the absorption layer, the wider bandgap layer and the passivation layer being determined by the relative thickness of the layers of the first and second materials and, after deposition of the layers of first and second materials, annealing the first and second materials to produce an alloy of the first and second materials;
patterning the doping layer;
driving dopant from the patterned doping layer into the wider bandgap layer and the radiation absorption layer to form a doped region;
patterning the passivation layer to expose the doped region;
and
forming an electrical contact to the doped region.

THE REFERENCES

The references relied upon by the examiner are:

Mitra	5,998,235	Dec. 7, 1999
Rosbeck et al. (Rosbeck)	5,466,953	Nov. 14, 1995
Cockrum et al. (Cockrum)	4,956,304	Sep. 11, 1990
Irvine et al. (Irvine)	4,566,918	Jan. 28, 1986

THE REJECTIONS AT ISSUE

Claims 28, 29, 31, 32, 41, 42, and 44 through 46 stand rejected under 35 U.S.C. § 102 as being anticipated by Cockrum.

Claims 1, 2, 4, 5, 14, 15, and 17 through 19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Rosbeck.

Claims 30, 33, 35 through 40, 43, 47, and 49 through 54 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Mitra.

Claims 3, 6, 8 through 13, 16, 20, and 22 through 27 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Rosbeck and Mitra.

Claims 33, 34, 37, 39, 40, 47, 48, 51, 53, and 54 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Irvine.

Claims 6, 7, 10, 12, 13, 20, 21, 24, 26, and 27 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Rosbeck and Irvine.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of anticipation and obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

With full consideration being given to the subject matter on appeal, the examiner's rejections and the arguments of appellant and examiner, for the reasons stated infra, we sustain the examiner's rejection of claims 1 through 13 and 20 through 40 and 47 through 54. We reverse the examiner's rejection of claims 14 through 19 and 41 through 46 under 35 U.S.C. § 103.

THE REJECTION UNDER 35 U.S.C. § 102 OVER COCKRUM

We first consider the examiner's rejection of claims 28, 29, 31, 32, 41, 42 and 44 through 46 under 35 U.S.C. § 102. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.) , cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

On page 8 of the brief, appellant groups claims 28, 29, 31 and 32, and provides arguments as to why independent claim 28 is not anticipated by Cockrum.. Appellant argues that claim 28 recites forming a patterned doping layer above the passivation layer and that Cockrum does not teach this limitation. Appellant argues, on pages 8 and 9 of the brief:

In Figure 4E of Cockrum, the doping source layer 30 is not patterned. In figure 4F, the doped layer 30 has been patterned by a "lift off" process due to the removal of mask layer 26. However, this lift off process removes all of those portions of source layer 30 that are above the passivation layer 18. Before this lift off patterning, source layer 30 is not patterned. After this step, no part of source layer 30 remains above passivation layer 18.

In response the examiner states, on pages 9 and 10 of the answer:

Examiner respectfully disagrees. Pattern is defined as "to furnish, adorn, or mark with a design." [Examiner cites Merriam-Webster's Collegiate Dictionary 10th edition for definition.] It should be noted that independent claim 28 does not require any specific design of the doping layer. Thus a doping layer of any design formed above the passivation layer would anticipate this element recited in independent claim 28.

In the Reply Brief, on page 2, appellant takes exception to the examiner's interpretation of the term pattern and argues that the examiner's definition is inconsistent with the interpretation of the term that would be understood by those skilled in the art. Appellant argues, on page 3 of the Reply Brief:

In the present case, several of the pending claims recite "forming a patterned doping layer" (claims 1, 28) or "patterning the doping layer" (claims 6, 20, 33, 47). The specification clearly uses the term "patterning" to mean a material removal process. For example, in a disclosed embodiment "patterning" is equated to "etching":

After formation of layers 14, 16, 18, 20 and 21, doping layer 21 is *patterned* to provide doped mesa 23 as shown in Figure 5. P-doped layer 21 is *etched* using a photolithography formed mask (not shown) and known wet etching techniques. The mask is then

removed and *resulting structure of Figure 5* is then annealed.
[citing paragraph 23 of appellant's specification].

Such patterning of a layer can be clearly be seen by comparing the views provided by Figures 4 and 5. The patterning causes a portion of the layer 21 in Figure 4 to be removed, resulting in the mesa 23 shown in Figure 5. Thus, the term "pattern" and its alternative forms "patterning" and "patterned", when considered in the context of the specification, clearly refer to selective material removal. In the claims, therefore, a "patterned" layer is one in which at least some portion of the layer has been removed and "patterning" a layer refers to removal of at least some portion of the layer.

Appellant concludes (*id.*) "those skilled in the semiconductor art readily understand that 'patterning' means a material-removal process is being performed, for example involving masking and selective removal or some material."

We concur with the examiner's interpretation. In analyzing the scope of the claim, office personnel must rely on appellants' disclosure to properly determine the meaning of the terms used in the claims. Markman v. Westview Instruments, Inc., 52 F3d 967, 980, 34 USPQ2d 1321, 1330 (Fed. Cir. 1995). "[I]nterpreting what is *meant* by a word *in* a claim 'is not to be confused with adding an extraneous limitation appearing in the specification, which is improper." (Emphasis original) In re Cruciferous Sprout Litigation, 301 F.3d 1343, 1348, 64 USPQ2d 1202, 1205, (Fed. Cir. 2002) (citing Intervet Am. Inc v. Kee-Vet Labs., Inc. , 887 F.2d 1050, 1053, 12 USPQ2d 1474, 1476 (Fed. Cir. 1989).

Claim 28 contains the limitation "forming a patterned doping layer above the passivation layer." It is readily apparent that the term "patterned" in this limitation is describing the doping layer as having a pattern. We do not consider

that this term “patterned” implies the process by which the patterned doping layer is created. We do not consider the paragraph 23 of appellant’s specification to provide a special definition of the term “patterned.” Rather, we consider the first sentence of paragraph 23 “doping layer 21 is patterned to provide doped mesa 23” to be a description of the pattern in the doping layer, and the second sentence to provide a description of how the pattern is created. We consider appellant’s asserted definition, that patterning requires a removal process, to be an attempt to import an extraneous limitation from the specification into the claim. Accordingly, we consider the scope of claim 28’s limitation of “forming a patterned doping layer above the passivation layer” to include a doping layer above the passivation layer which has a pattern, design, we do not consider the claim to be limited to how the design is produced in the doping layer.

Having determined the scope of the claim, we consider the relevant teachings of the applied reference, Cockrum. Appellant, on page 8 of the brief, does not argue that that Cockrum does not teach a doping layer above the passivation layer, rather that after the doping layer is patterned, by the step of lifting off the mask 26 (the transition from Cockrum’s figures 4E to 4F), the doping layer no longer above the passivation layer 18. We disagree with appellant’s arguments as it relies on appellant’s asserted definition of patterning requiring a step of removal. We consider the doping layer shown in Cockrum’s figure 4E to be a patterned doping layer, (layer 30), in that it has a design, having peaks and troughs, the peaks being over the passivation layer (layer 18). One could describe the sections of the doping layer, which are over the passivation

passivation layer (layer 18) as mesas. Further, even if we were to consider “patterning” to require removal of material, which we do not, the claim does not identify what material is removed and during what stage of manufacture. Thus, the pattern is created by material removal, the removal of sections of the passivation layer (the transition from figures 4C to 4D), which provides the troughs that produce the pattern in doping layer 30. For the forgoing reasons we sustain the examiner’s rejection of independent claim 28 and dependent claims 29, 31 and 32 under 35 U.S.C. § 102.

We next consider independent claim 41. Initially, we note that appellant’s arguments, on pages 9 and 10 of the brief, group dependent claims 42 and 44 through 46 with independent claim 41. Appellant argues:

[N]either Cockrum nor Rosbeck^[1] show or suggest, “forming a patterned doping layer above the passivation layer.” Because the source layer 30 of Cockrum is not above the passivation layer 18 and is in direct contact with the p-type layer 12, no “a doped region extending through the passivation layer into the radiation absorption layer” is formed. Therefore, Cockrum does not show or suggest . . . every limitation of claim 41.

In response the examiner states, on page 10 of the answer:

Cockrum *et al.* expressly teach thermal diffusion from a patterned source layer 30 formed above the passivation layer 18 in order to form discrete n-type regions with the resultant p-n junctions underlie the passivation layer 18 A thermal diffusion from a patterned source layer 30 into $Hg_{1-x}Cd_xZnTe$ would drive dopant from the patterned source layer 30 into both the $Hg_{1-x}Cd_xZnTe$ radiation absorption layer (12) and the $Hg_{1-x}Cd_xZnTe$ passivation layer (18). Thus, Cockrum *et al.* disclose a doped region extending through the passivation layer into the radiation absorption layer.

^[1] We note that neither claim 41 nor any of the claims dependent upon claim 41 are rejected over Rosbeck alone or in combination.

While we find the examiner's reasoning intuitive, we do not find any evidence in Cockrum that dopant layer 30 diffuses into the passivation layer 18. Claim 41 contains the limitation "a doped region extending through the passivation layer into the radiation absorption layer." We consider this limitation to include a doped region in both the passivation layer and the radiation absorption layer. Figure 4G and the accompanying description in column 6 of Cockrum teach that doped layer, layer 30, is diffused into region 14, extending into the absorption layer 12. However, neither the figures nor the description identify that the doped region extends through the passivation layer 18. Although the hypothesis, that since the doped region 30 of figure 4F is diffused into absorption layer 12, this doped region would also diffuse into the abutting layer 18 seems logical, we find no evidence in Cockrum that support the hypothesis. Accordingly, we will not sustain the examiner's rejection of claim 41 and dependent claims 42 and 44 through 46 under 35 U.S.C. § 102.

THE REJECTION UNDER 35 U.S.C. § 103 RELYING UPON COCKRUM

IN VIEW OF ROSBECK

The examiner has rejected claims 1, 2, 4, 5, 14, 15 and 17 through 19 under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Rosbeck.

Appellant's arguments group independent claim 1, with dependent claims 2, 4 and 5 on page 10 of the brief. Appellant argues on page 10 of the brief:

As noted above with regard to claim 28, Cockrum does not show or suggest, "forming a patterned doping layer above the passivation layer".... It does not show or suggest "forming a patterned doping layer" at all.

We disagree with appellant's arguments. Claim 1 contains the limitation "forming a patterned doping layer above the passivation layer." This limitation is virtually identical to the "forming a patterned doping layer" of claim 28, and we consider it to have virtually identical scope. As discussed supra, we find that Cockrum does teach forming a patterned doping layer as claimed in claim 28. Accordingly, we sustain the examiner's rejection of independent claim 1 and dependent claims 2, 4 and 5 for the same reasons stated supra with respect to claim 28.

We next consider the examiner's rejection of independent claim 14 and dependent claims 15, 17 through 19. Appellant argues, on page 11 of the brief:

... [N]either Cockrum nor Rosbeck show or suggest "forming a patterned doping layer above the passivation layer." Because the source layer 30 of Cockrum is not above the passivation layer 18 and is in direct contact with the p-type layer 12, no "doped region extending through the passivation layer into the wider bandgap layer and the radiation absorption layer" is formed.

We concur with appellant. Independent claim 14 includes the limitation "a doped region extending through the passivation layer into the wider bandgap layer and the radiation absorption layer." We find that the scope of this limitation includes that the doped region exists in the passivation layer, the wider bandgap layer and the radiation absorption layer. As stated supra with respect to claim 41, we do not find evidence in Cockrum that supports the examiner's hypothesis that the doped region 30 of Cockrum diffuses into the passivation layer 18. Similarly, we do not find that Rosbeck teaches this limitation or provides

evidence to support the examiner's hypothesis. Accordingly, we will not sustain the examiner's rejection of independent claim 14 or dependent claims 15, 17 through 19.

THE REJECTION UNDER 35 U.S.C. § 103 RELYING UPON COCKRUM
IN VIEW OF MITRA

The examiner has rejected claims 30, 33, 35 through 40, 43, 47, and 49 through 54 under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Mitra.

Appellant argues on page 11 of the brief:

Claim 30 is dependent upon claim 28 and thus includes every limitation of claim 28. As noted above, the Cockrum reference does not show or suggest, "forming a patterned doping layer above the passivation layer." Mitra merely shows a process for making a layer having a precise band gap. Thus, Mitra also does not show or suggest "forming a patterned doping layer above the passivation layer" and does not suggest this step when combined with the Cockrum reference.

We disagree, as stated supra we find that Cockrum does teach claim 28's limitation of forming a patterned doping layer. Accordingly, we sustain the examiner's rejection of claim 30 for the reasons stated supra with respect to claim 28.

Appellant's arguments, on page 12 of the brief, group independent claim 33 with dependent claims 35 through 40. Appellant argues:

As noted above with regard to claim 30, the cited references do not show or suggest "forming a patterned doping layer above the passivation layer." Thus, the combined references do not show or suggest every limitation of claim 33.

The examiner responds, on page 12 of the answer that the examiner is not convinced by appellant's arguments for the reasons discussed above.

We concur with the examiner. Claim 33 contains limitations of "forming a doping layer above the passivation layer" and "patterning the doping layer." For the reasons discussed supra, with respect to claim 28, we consider the step of patterning the doping layer to be a step where a design is made in the doping layer. For the reasons stated supra with respect to claim 28 we find that Cockrum teaches these features. Additionally, we note: claim 33 does not require the formed doping layer to only be over the passivation layer. As such, claim 33 is not limited to the step of patterning being performed on that part of the doping layer which is over the passivation layer. Appellant's discussion of Cockrum, on page 7 of the brief, states:

A doping source layer 30 is then formed on the surface of the patterned structure with the mask layer 26 in place. The mask layer 26 is then removed. This step patterns doping source layer 30 and removes the portion of layer 30 above passivation layer.

Thus, by appellant's description of the Cockrum reference, Cockrum teaches the claim limitation of forming a doping source layer 30, part of the doping layer being above the passivation layer, and then patterning the doping layer. For all of the forgoing reasons, we sustain the examiner's rejection of independent claim 33 and dependent claims 35 through 40.

We next consider the rejection of claim 43. On page 12 of the brief appellant argues that claim 43 is dependent upon claim 41 and the rejection of claim 43 is improper for the same reasons.

We concur. As stated supra we do not find that Cockrum teaches the claim 41 limitation “a doped region extending through the passivation layer into the radiation absorption layer.” The examiner has not asserted, nor do we find, that Mitra teaches this limitation. Accordingly, we will not sustain the examiner’s rejection of claim 43.

Appellant’s arguments, on page 12 of the brief, group independent claim 47 with dependent claims 49 through 54. Appellant argues, on page 13 of the brief:

As noted above with regard to claim 43, the cited references do not show or suggest forming a patterned doping layer above the passivation layer.^[2] As noted above, the only patterned doping layer in any of these references is layer 30 of Figure 4F of Cockrum, but no portion of this layer is above passivation layer 18. Thus, the cited references, singularly or in combination, do not suggest “driving dopant from the patterned doping layer” that is “above the passivation layer” as provided in claim 47.

We disagree with appellant. Claim 47 includes the limitations of “forming a doping layer above the passivation layer,” “patterning the doping layer,” and “driving dopant from the patterned doping layer into the radiation absorption layer to form a doped region.” We do not find a limitation in claim 47 which requires the formed doping layer to only be over the passivation layer. As such, claim 47 is not limited to the step of patterning being performed on that part of the doping layer which is over the passivation. As discussed supra with respect to claims 28 and 33, Cockrum teaches forming a doping layer 30 over passivation layer 18.

² Appellant’s arguments directed to claim 43 do not argue that the references do not show forming a pattern doping layer. Rather, appellant’s argument regarding claim 43 discusses the limitation, “a doped region extending through the

As discussed supra with respect to claims 28 and 33, there are several aspects of Cockrum, which can be considered to meet the limitation of patterning. Further, as discussed with respect to claim 41, we find that Cockrum teaches in Figure 4G and the accompanying description in column 6 teach that the doped layer 30, is diffused into region 14, extending into the absorption layer 12. Accordingly, we sustain the examiner's rejection of dependent claim 47 and dependent claims 49 through 54.

THE REJECTION UNDER 35 U.S.C. § 103 RELYING UPON COCKRUM IN
VIEW OF ROSBECK AND MITRA

The examiner rejects claims 3, 6, 8 through 13, 16, 20 and 22 through 27 under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Rosbeck and Mitra.

On page 13 of the brief appellant argues that claim 3 is dependent upon claim 1, and thus includes the limitation of "forming a patterned doping layer above the passivation layer." Appellant argues that the three references do not teach this limitation.

We are not convinced by appellant's arguments. As stated supra, with respect to claim 1, we find that Cockrum teaches the limitation of "forming a patterned doping layer above the passivation layer." Accordingly, we sustain the examiner's rejection of claim 3.

passivation layer into the radiation absorption layer," which is not present in claim 47.

On pages 13 and 14 of the brief appellant argues that claim 16 is dependent upon claim 14, and is allowable for the reasons discussed with respect to claim 14.

We concur with appellant. As discussed supra, we do not find that Cockrum teaches the claim 14 limitation of “a doped region extending through the passivation layer into the wider bandgap layer and the radiation absorption layer.” Nor do we find that the combination of Rosbeck and Mitra teach or suggest this limitation. Accordingly, we will not sustain the examiner’s rejection of claim 16.

Appellant’s arguments, on page 14 of the brief, group independent claim 6 with dependent claims 8 through 13. Appellant argues on page 14 of the brief “the cited references, singularly or in combination, do not suggest ‘driving dopant from the patterned doping layer’ that is ‘above the passivation layer’ as provided in claim 6.” Appellant’s arguments, on page 15 of the brief, group independent claim 20 with dependent claims 22 through 27, and present essentially the same argument presented with respect to claim 6.

We disagree with appellant’s arguments. Claim 6 contains the limitations of “forming a doping layer above the passivation layer,” “patterning the doping layer” and “driving dopant from the patterned doping layer.” Claim 20 also contains these limitations. We consider these limitations to be virtually identical in scope to the limitations of claim 47 discussed above. As stated supra, we do not find that these limitations require the formed doping layer to only be over the passivation layer, as such claims 6 and 20 are not limited to the step of

patterning being performed on that part of the doping layer, which is over the passivation layer. Accordingly, we sustain the examiner's rejection of independent claims 6, 20 and dependent claims 8 through 13 and 22 through 27 for the reasons stated supra with respect to claim 47.

THE REJECTION OF CLAIMS 33, 34, 37, 39, 40, 47, 48, 51, 53 AND 54

UNDER 35 U.S.C. § 103 BASED UPON COCKRUM AND IRVINE

The examiner rejects claims 33, 34, 37, 39, 40, 47, 48, 51, 53 and 54 under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Irvine.

Appellant's arguments, on page 15 of the brief, group independent claim 33 with dependent claims 34, 37, 39, and 40. Appellant argues on page 16 of the brief:

As noted above, the only patterned doping layer . . . in any of the cited references is layer 30 of Figure 4F of Cockrum, but no portion of this layer is above passivation layer 18. Irvine merely shows a method of making a layer having a selected band gap.

On page 16 appellant's arguments group independent claim 47 with dependent claim 48, 51, 53 and 54 and presents similar arguments.

We are not convinced by appellant's arguments. As discussed supra, claims 33 and 47 contain the limitations of "forming a doping layer above the passivation layer," "patterning the doping layer" and "driving dopant from the patterned doping layer." As stated supra, we do not find that these limitations require the formed doping layer to only be over the passivation layer. As such, claim is not limited to the step of patterning being performed on that part of the doping layer, which is over the passivation layer. As stated supra, we find that

Cockrum teaches these limitations. Accordingly, we sustain the examiner's rejection of independent claims 33, 47 and dependent claims 34, 37, 39, 40, 48, 51, 53, and 54 under 35 U.S.C. § 103 based upon Cockrum and Irvine for the same reasons stated supra with to the examiner's rejection of claims 33 and 47 based upon Cockrum in view of Mitra.

THE REJECTIONS OF CLAIMS 6, 7, 10, 12, 13, 20, 21, 24, 26, AND 27
UNDER 35 U.S.C. § 103 BASED UPON COCKRUM, ROSEBECK, AND IRVINE

The examiner rejects claims 6, 7, 10, 12, 13, 20, 21, 24, 26, and 27 under 35 U.S.C. § 103 as being unpatentable over Cockrum in view of Rosbeck and Irvine.

Appellant's arguments, on page 17 of the brief, group independent claim 6 with dependent claims 7, 10, 12 and 13. Appellant's arguments on page 17 of the brief are identical to those discussed above with respect to the rejection of claim 33 under 35 U.S.C. § 103 based upon Cockrum and Irvine. On page 18 of the brief, appellant's arguments group independent claim 20 with dependent claim 21, 24, 26 and 27, and also present the same issues discussed above with respect to the rejection of claim 33 under 35 U.S.C. § 103 based upon Cockrum and Irvine.

We are not convinced by appellant's arguments. As discussed supra claims 6 and 20 contain the limitations of "forming a doping layer above the passivation layer," "patterning the doping layer" and "driving dopant from the patterned doping layer." As stated supra, we do not find that these limitations require the formed doping layer to only be over the passivation layer. As such

claim is not limited to the step of patterning being performed on that part of the doping layer, which is over the passivation layer. As stated supra, we find that Cockrum teaches these limitations. Accordingly, we sustain the examiner's rejection of independent claims 6, 20, and dependent claims 7, 10, 12, 13, 20, 21, 24, 26, and 27 under 35 U.S.C. § 103 based upon Cockrum, Rosbeck, and Irvine for the same reasons stated supra with to the examiner's rejection of claims 33 and 47 based upon Cockrum in view of Mitra.

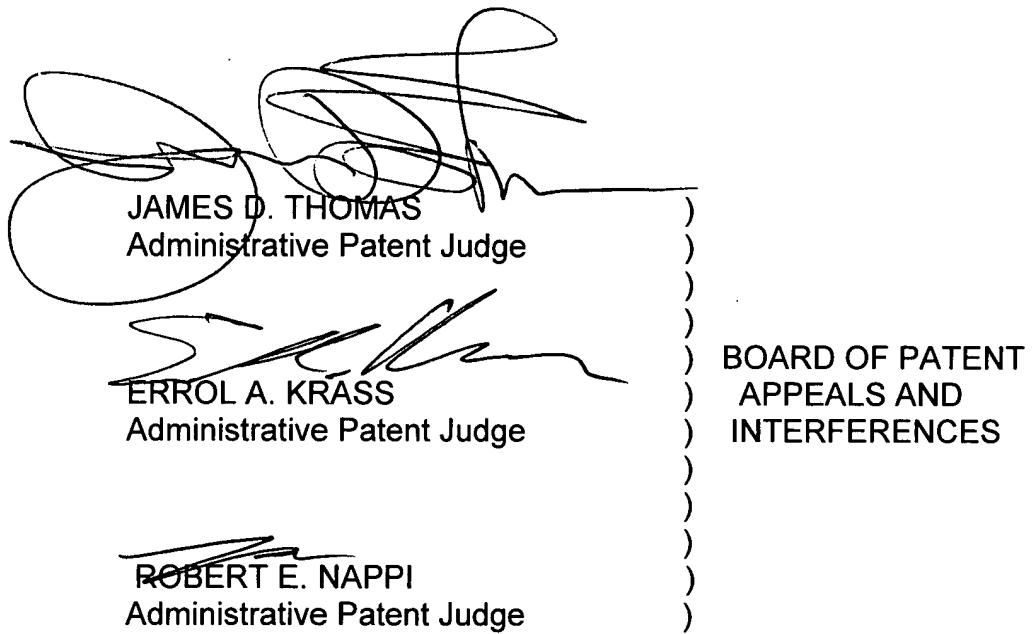
CONCLUSION

Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief or by filing a reply brief have not been considered and are deemed waived by appellant (see 37 CFR § 41.37). Support for this rule has been demonstrated by our reviewing court in In re Berger, 279 F.3d 975, 984, 61 USPQ2d 1523, 1528-29 (Fed. Cir. 2002) wherein the Federal Circuit stated that because the appellant did not contest the merits of the rejections in his brief to the Federal Circuit, the issue is waived. See also In re Watts, 354 F.3d 1362, 1368, 69 USPQ2d 1453, 1458 (Fed. Cir. 2004).

In view of the forgoing, we sustain the examiner's rejection of claims 1 through 13 and 20 through 40 and 47 through 54. We reverse the examiner's rejection of claims 14 through 19 and 41 through 46 under 35 U.S.C. § 103. The decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a) (1) (iv).

AFFIRMED-IN-PART



JAMES D. THOMAS)
Administrative Patent Judge)
ERROL A. KRASS) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
ROBERT E. NAPPI) INTERFERENCES
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Appeal No. 2005-2533
Application No. 09/976,559

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